



Students helped to build this combination
Shop and Classroom Combination.

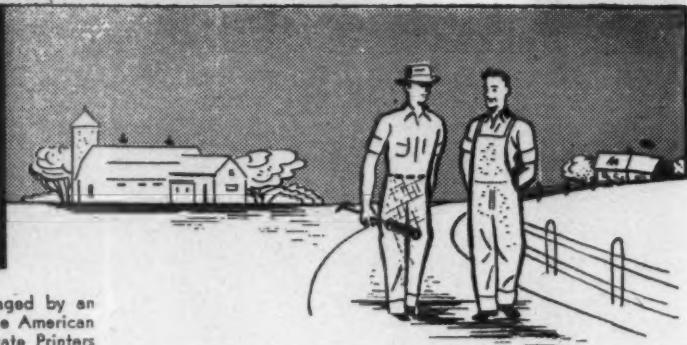
LAWRENCE

Facilities

The Agricultural Education Magazine

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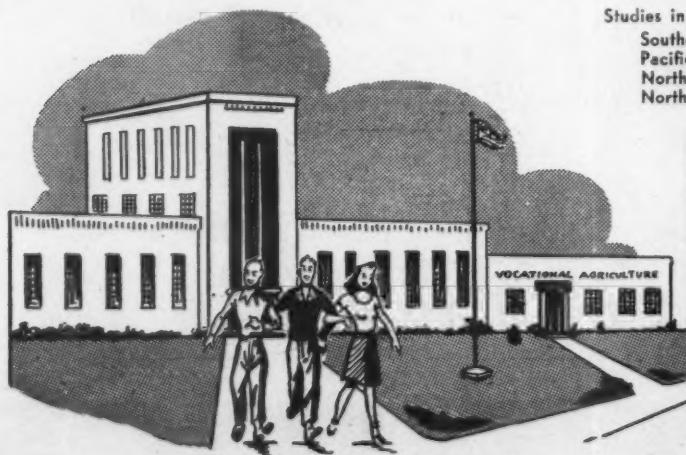
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Contents

Editorials

The Place and Use of Goals in Learning.....	243
Carsie Hammonds.....	
First Facility.....	243
Out of the Basement.....	243
Tomorrow's Leadership.....	243

Housing the Department.....

David McClay and C. B. Davenport.....	244
--	-----

Department of Vocational Agriculture, Weare, N. H.....

E. H. Little.....	245
-------------------	-----

Classroom Facilities.....

C. Oscar Loreen.....	246
----------------------	-----

Planned Storage Facilitates Good Housekeeping.....

Robert O. Gingery.....	247
------------------------	-----

Observation on Use of School Farms in Michigan.....

Raymond M. Clark.....	248
-----------------------	-----

A High School Farm.....

C. A. Cazaly.....	249
-------------------	-----

Built to Meet Needs.....

John Hovens.....	250
------------------	-----

Community Canning Centers.....

T. G. Walters.....	251
--------------------	-----

Counseling During the Emergency.....

Alfred H. Krebs.....	252
----------------------	-----

Learning Through Magnetic Recordings.....

George W. Wiegers, Jr.....	254
----------------------------	-----

Selecting Books.....

Ben Bristol.....	255
------------------	-----

Organizing and Storing Teaching Materials.....

B. C. Bass.....	256
-----------------	-----

Improving Instruction.....

B. P. Dilworth.....	257
---------------------	-----

Workshops in Rural Electrification.....

C. R. Wilkey.....	257
-------------------	-----

Studies in Progress in Agricultural Education.....

Southern Region.....	258
Pacific Region.....	259
North Atlantic Region.....	260
North Central Region.....	262

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Editorials

The place and use of goals in learning



Carsie Hammonds

A GOAL is the end or object aimed at. It is not just a wish or a belief that a certain result is desirable, without intention to produce or secure the result. Goals are determiners of action, of behavior. Not only is a goal a determiner of the action or activities to engage in to reach the goal, it is a determiner of what will be satisfying and what will be annoying.

Success and error (right and wrong) during performance exist only in relation to a goal. If one has no goal, he can make no errors with respect to it. Nor can one make progress in reaching a goal he does not have. Success and error have no significance for one except as they relate to his goal.

Without knowledge of success and error in attempting to attain one's goal, practice is futile in improving performance. This fact has been proved many times in experimental work. (In one experiment, students did not gain in their ability to draw 3-inch lines by drawing a thousand lines without knowing how well they were doing. A control group with the knowledge after each line drawn improved rapidly.)

Awareness alone of success and error does not bring about improvement in performance. Improvement is brought about during performance subsequent to awareness, in which successes are practiced and errors omitted.

It is self-evident that there should be knowledge of success and error as early in the performance as possible, so that improvement may begin to take place—so that successes may be practiced and errors omitted. At the *end* of extended practice or performance is too late for the knowledge of success and error to influence that performance. The good teacher does not wait till the end.

"Progress charts" have an important place in the teaching-learning of agriculture. A progress chart may, for example, enable us to know the weight of pigs when they are 56 days old, or the number of eggs laid per hen in October. The weights or numbers may be compared with a standard to give them significance. Practices being followed can be known and evaluated very early. However, it is *achievement* itself that challenges most people. Boys and younger students, particularly, stress achievement (other than learning) as a measure of success. Achievement seldom occurs only at the end of an undertaking. Instead, it occurs, or fails to occur, all during the undertaking.

To the extent that the desire to attain a goal is strong, knowledge of success or progress made tends to be satisfying and the errors one is aware of tend to be annoying. Learners should have worthy goals. One of the important purposes of education is to help learners have worthwhile goals—help provide the needs for learning.

Goals and ideals do not mean the same thing. Ideal implies perfection. An ideal is something *toward which* to strive, if one cares to, though not attainable. A goal, on the other hand, is an intended and expected attainment, which of course, may be far short of the ideal.

CARSIE HAMMONDS, Teacher Education
University of Kentucky

First facility

THE effective department of agricultural education requires a variety of facilities. Some of the most valuable cost the taxpayer little, if anything. We refer to the farms, herds, flocks and forests of the community. Nothing can be provided in the way of references, visual aids, laboratories or shops or even school farms which can give the same quality of reality to the learning situation. True, we need those other aids or facilities but the farms of the community come first.

Our students spend more hours there than in school. The problems arising there are real and vital to students. Most of the resources required in solving those problems are there. It is not surprising, therefore, to recognize the farms of the community as the single most important facility to be used for the purposes of achieving efficiency in learning to farm.

What a challenge to the teacher? Perhaps there are no pure-bred herds, no contoured fields, no tested flocks, no painted buildings or, no landscaped farmsteads to serve as examples for the green hands. It is in that case, a department facility which must be improved or strengthened. Efforts in such direction pay double, once for the benefit of the class and teacher and once for the farmer and the community.

Let it not be said of us that we let the years go by without working hard to improve our community as a place to live and learn.

Out of the basement

The benefits of sunshine, fresh air, comfortable quarters and even sweet symphonies are generally available to our good herds of livestock. It is strange, to put it gently, that we are unwilling to do likewise for our own flesh and blood in the public schools.

Vocational agriculture started off in the basement because "that was the only place left." In spite of noteworthy progress there are too many departments still housed below the ground. Even though they are safer in event of atomic blasts *we want out*. Not one of us for ourselves or the students in our classes should meekly continue to put up with quarters that blue-blooded livestock would disdain.

Tomorrow's leadership

Commencement—1951 is but a few days away. The orator of the day may well tell youth of the grave responsibilities which rest on their shoulders. That burden, however, is partly ours. We are working at the task with our co-teachers, parents, pastors, and others. The selection and development of leadership for the next generation is not the prerogative of any single group or agency in a democratic society.

Those students who have the interest and ability to do advanced study face many issues. They require our counsel and help in appraising the situation for themselves. It will be a significant contribution to the continuing development of leadership for agriculture to render this assistance. This further education will better prepare them to serve in their chosen field of agriculture.

Fortunately, we do not have to make the choice of who will go or who will stay. We can and must help all students to plan their careers. We can encourage all students to drive ahead for their own highest personal development for service to community and country.



Housing the department Planning with F.F.A. alumni gets results

DAVID R. McCLAY, Graduate Student, Cornell University
C. B. DAVENPORT, Teacher, Mount Holly, New Jersey

RECENTLY I had occasion to visit the vocational agriculture department at Mt. Holly, New Jersey, in connection with a study I have been making. I was impressed with the new agricultural building which this department recently secured and the way in which it came into being. Following is the story of how this department secured its present facilities as told by C. B. Davenport, teacher of vocational agriculture at Mt. Holly for the last 30 years. Mr. Davenport also offers some helpful suggestions for those schools planning to build agricultural buildings.

The following is Mr. Davenport's story.



David McClay

Our town is a community of about 8,000 people, situated about 20 miles northeast of Philadelphia. While it is situated in the heart of a rich agricultural area and the bulk of its business is dependent upon the buying power of the farming population, it has many



C. B. Davenport

of the aspects of a commuting town, with some local manufacturing enterprises.

In 1921 when I was hired to start a vo-ag course in the local high school, local farmers were naturally a little hesitant about this new type of education, and perhaps if they had realized how "dumb" the new teacher really was, they would have been more skeptical. At any rate I was hired and told to go out in the highways and byways and get a

class. They gave me a few leads but I didn't know one road from another. As a result of the first summer's work I believe about ten or twelve decided to try it.

We were put in a small, poorly heated room next to the coal bin in the basement, and there began our feeble efforts. As years passed, many attempts were made to secure a new high school, where we might have more adequate quarters, but all came to naught.

About twelve years ago a Regional High School was voted, and we were promised more adequate quarters, but a last minute curtailment of funds found us again in a regular high school classroom with very limited facilities, and no shop.

Active F.F.A. Alumni

Over the years our Alumni F.F.A. group, which had been in existence for a number of years, began to become more powerful and they set out to champion the cause of an adequate building. After unsuccessfully "camping on the doorstep" of the Board of Education for some years, they finally got a break. The Board of Education had some \$35,000 which they felt might be spared, and the communities of the Regional District were asked to vote on the transfer of funds for this purpose. With the active backing of the Alumni F.F.A. the issue passed with very few opposing votes.

The Alumni F.F.A. building committee was asked by the Board of Education to meet with them to plan the building. When we had decided upon our minimum needs and bids were solicited, we found that the cost would be considerably over the available funds. However, with the active cooperation of Alumni and active F.F.A. chapters, we were able to do enough work to bring the cost within bounds, and work was begun in the summer of 1949. The two chapters pitched in and did all of the grading. The boys did considerable work on the building. We finally got into the building about January, 1950.

The Alumni Committee and teacher agreed on a few fundamental "musts!" These were as follows:

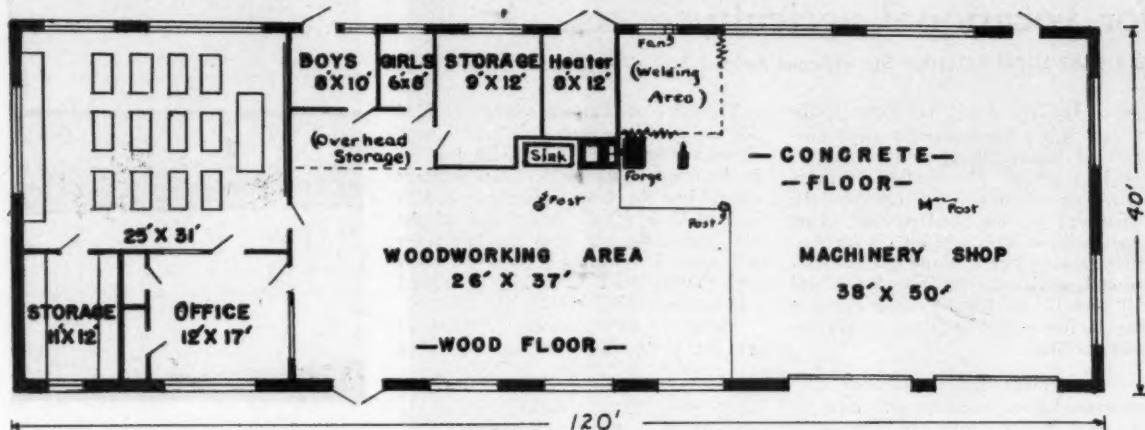
1. As much space as possible with no frills.
2. A building at least 40 feet by 120 feet.
3. A regulation-sized classroom on the side of the building away from the high school, for obvious reasons.
4. An office so situated so that the activities of the class room and shop could be observed from it.
5. A combination library and storage room for teaching materials adjoining the classroom.
6. Shop doors large enough for the largest machinery.
7. A separate heating unit for the building, so that it could be used for evening farm meetings of all kinds without having to depend on the high school heating facilities.
8. Lockers and washing facilities in the shop area, so that they could be visible at all times. (Just another discipline precaution.)
9. A storeroom for shop supplies adjacent to the shop area.
10. Laboratory demonstration table in classroom for milk and soil testing and other demonstration purposes. We also utilize a small area in the shop for routine milk and soil testing, so as not to disrupt a class for this work.
11. Plenty of room for expansion if and when needed.

Fortunately, we got about all we asked for, but as always in the case we can now see a few things which might have been improved.

1. While we were apparently asleep at the "proverbial switch," the electrical contractor put a total of six outlets in the office and only two in the classroom. The ones in the classroom are on the laboratory bench in the rear of the room and none up front. Just what the six in the office are for I have not yet been able to fathom.
2. For sake of economy we had to agree to three supporting columns in the shop area, which you can see in the diagram. These we knew were undesirable but we could do nothing about it. However, they really have not been so much of an inconvenience as we expected, since

VOCATIONAL AGRICULTURE BUILDING

— MOUNT HOLLY, NEW JERSEY



(A drawing) Floor plan of the vocational agriculture building, Mt. Holly, New Jersey.

they act as a place for service outlets in the shop area.

3. We should have had some 110V. outlets on these columns instead of all 220V.
4. The fact that the shop walls are practically all windows is fine from a light standpoint but leaves very little room for lumber racks and tool cabinets.
5. If the ceilings in the two toilets had been normal height we could have used the space above for storage. As it is they extend to the roof.
6. Some of the Alumni Committee think that our division of machinery and woodworking areas should have been a little different, allowing more room for machinery area with a concrete floor and less woodworking area.
7. The boiler room and perhaps the toilets might have been additions to the building, requiring no more walls but only additional roof. This would have enlarged the usable shop area considerably.
8. The wall between the classroom and shop would be improved if insulated in some way to keep out noise of shop work.
9. We have steam heat which is often either too hot or too cold. There seems to be no way of assuring a happy medium. However, we do have plenty of heat.
10. The placement of lights in a shop area could be improved. We are not sure just how this could be brought about. We are using direct lighting with reflectors and 150 watt bulbs, but these leave something to be desired.
11. When we built the building I could see no reason for piping it for gas. Never having had a shop before I thought we could do all we needed in a classroom with an electric plate heater but now we find some uses for gas in the shop area.

We are too new to think seriously about any proposed or desired changes.

Our cover

Department of vocational agriculture, Weare, N. H.

E. H. LITTLE, Supervisor, New Hampshire

ENTHUSIASM, cooperation and industry on the part of local citizens, school board members, the local superintendent of schools, the principal, the teacher of agriculture and students enrolled in vocational agriculture, with a relatively small amount of capital, is often the difference between adequate and inadequate space to house a department of vocational agriculture.

The cover picture shows the remodeled department of vocational agriculture at Weare High School, Weare, New Hampshire. The high school building in Weare houses 48 pupils in grades 9-12, and 68 in grades 6-7-8. The principal of the school is also the teacher of agriculture, having administrative duties and teaching shop in grades 7 and 8. Faced with an increased enrollment in the elementary grades, the local school board found it necessary to provide more classroom space at a minimum cost. The agriculture department occu-

pied a standard classroom in the high school building with a separate building housing farm mechanics.

Previous to remodeling the farm mechanics building it consisted of a 24'x24' building with an ell approximately 17'x42'. Plans were made to remodel and build an addition to the farm mechanics building utilizing the 24'x24' space for an agricultural classroom and adding an addition of 14'x42' to the ell for the exclusive use of farm mechanics. The 24'x24' space was trussed, studs added, new windows and doors added, and the walls wainscoted in knotty pine and wallboard. The ceiling was covered with celotex, and adequate lighting installed. New tables, chairs, chalk board, bulletin files, magazine racks, and other necessary equipment were installed at a cost of approximately \$1800.

The added farm mechanics space of 14'x42' necessitated rebuilding the entire roof, adding new windows and pouring a new concrete floor over the entire area of 31'x42' at a cost of approximately \$1500. One carpenter was employed and the entire job was done by him with the help of the teacher of agriculture and the boys enrolled in vocational agriculture. The boys received invaluable training in building, remodeling and construction with the outcome of adequate housing facilities.

The 24'x24' classroom and the 32'x42' shop provide from 45-50 square feet of classroom space per pupil per agricultural class, and from 100-120 square feet of floor space per pupil per agricultural class for farm mechanics.

Mr. Lewis F. Foote, Goffstown, N.H., is the superintendent of schools and Mr. Gordon Traver is the principal and teacher of agriculture at Weare High School.

In fact, we are very happy to have what we do possess now. Some time in the future an additional lean-to type of storage space for storing machinery before there is room to work on it or after it is finished might be desirable. This could be enclosed by heavy wire to keep the cost at a minimum.

My only advice to those who plan to build such a building in the future is to get all the space you can for the money available, without any frills. We feel that we got a lot of building for the money spent. The other things which we might like to have can come later. However, some mistakes might be prevented by studying our experiences. ●

If you can't think of anything to say, just start passing out advice—it kills time, and nobody will pay any attention to it anyway!

Classroom facilities for vocational agriculture

C. OSCAR LOREN, Teacher Education and Assistant Supervisor, State College of Wash.

PROVIDING good classroom facilities will not guarantee a good program of vocational agricultural education in a school. The kind of program carried on depends very largely on the instructor; yet the good teacher, given good facilities with which to work, can render a more effective and efficient educational service to the community and will probably be happier while doing it than if the school neglects to provide good facilities.

Appearance and Organization

Let us try to visualize the kind of classroom facilities with which we would like to work and which would help create in our students the kind of attitudes and habits most conducive to learning. Imagine that we are entering a newly completed classroom for vocational agriculture.

We are impressed by the spaciousness of the room, and the light, cheerful appearance it makes. The walls and wood-work are varying shades of soft green; and the ceiling, of acoustical material, is egg-shell white. The floor is light in color, looks durable, and has some resiliency. It looks like it would be easily cleaned and maintained.

The room gives the appearance of neatness and order which shows that the furnishings and their placement have been well planned. We see that the classroom is simply furnished. Each of the student tables is of sufficient size to seat two boys.³ The table tops are light in color. The straight-back chairs are solidly built. The instructor's table is not elaborate; it has a small sink and a water tap.

The light fixtures are of the concentric ring type which use the incandescent type of bulb. These lights are comparatively inexpensive to install, are easily cleaned, and produce a good quality light for a classroom.²

One wall is devoted almost entirely to window space.³ Under the windows and 38 inches from the floor is a long shelf or counter 16 inches wide and running nearly the length of the room. The space under this counter which is not occupied by the silent, air-circulating type heating unit could be used for cabinets should additional storage be needed.

Storage Is Important

The front of the room has a 12-foot, green chalk board placed in the center of the wall. Maps and charts can easily be displayed by using the little sliding clamps installed just above the chalk board. We also notice a 12-inch strip of cork board just above the chalk board and running its full length.

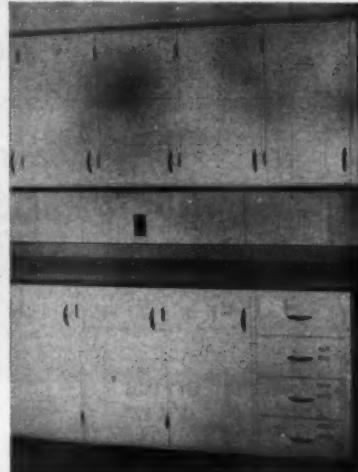
¹Tables, 2 feet wide and 5 feet long, are satisfactory for classroom use.

²A good recent publication on school lighting is "American Standard Practice for School Lighting,"—I. E. S., 51 Madison Avenue, New York.

³Calculations show 20 per cent of floor area.

The filing of charts has been provided for in an unique and satisfactory way. There are four shallow but wide drawers in the front of the room. These drawers extend into the shop storeroom which is located back of the front wall of the classroom. We are sure the instructor will appreciate having a place for maps and charts that is conveniently located and ample in size.

Along the wall opposite the windows we see a magazine display and filing



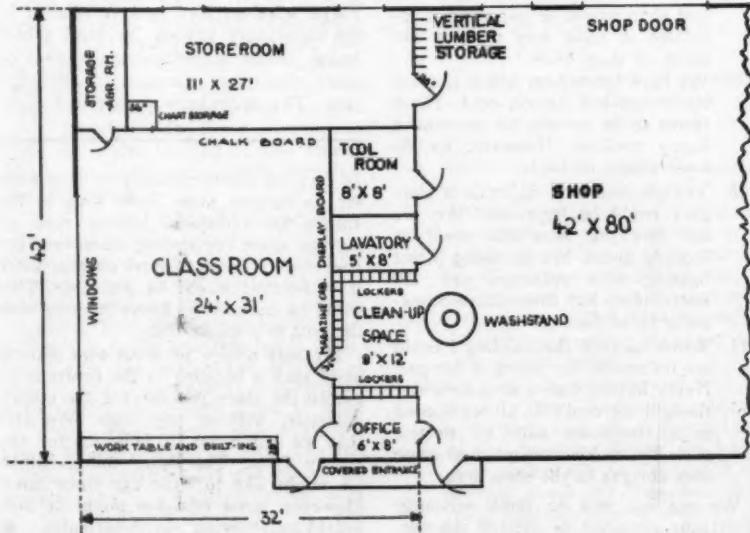
covered with stainless steel and contains two acid-resistant sinks. A glance at the base shows that toe room has been provided. Wall cabinets extend the full length of the floor cabinets and to the ceiling. One section of the wall cabinet provides one often overlooked feature; space for agricultural bulletins, copies of which are needed in quantity. There are a series of 120 shelves, 6½ inches wide, 9½ inches deep, and 2½ inches apart, to be used for filing such bulletins.

The neat appearance of the cabinet is due to using lipped doors that cover the opening, rather than using doors that fit into the opening. Such doors are quickly and economically made as compared to other types. Cabinets with solid lipped doors present a neater appearance than do those with glass doors.

There are other features in this classroom that are apparent as we make a closer inspection. The lower part of the windows are of obscure glass so that activities outside will not distract the students while seated.

(Continued on Page 250)

SINGLE CLASSROOM AND FARMSHOP UNIT



Planned storage facilitates good housekeeping

ROBERT O. GINGERY, Teacher,
David City, Nebraska

Every school which has a department of vocational agriculture has a problem of storage for their books, bulletins, charts, magazines, seed samples, grasses, etc. The instructors usually like to keep a few of the back issues on hand of some of their magazines and newspapers.

Several instructors of Vocational Agriculture in Nebraska have built cabinets and storage facilities which the pictures indicate. The size of the cabinets vary with the width, depth, and height of the room. The average depth of the cabinets is usually about 30" to 32". In most cases these cabinets are built in the rear of the classroom. This facilitates the use of them for special conference study periods and also for judging purposes without interfering with the regular class work. One wall of the classroom is devoted to a bulletin board, one wall for windows, and the front of the room contains the blackboards.

The pictures indicate doors on the top and also on the bottom. These can be optional, however. It is suggested to have doors to the storage space below which will tend to keep the dirt and dust from the stored material. By having the magazines on display, one can readily see and select the one he wants. A modification of the plan can provide for storage shelves for student notebooks, project record books, charts, maps, and other materials of irregular shapes and sizes. By having the space enclosed below each magazine shelf, a space is provided for filing back issues and they can easily be kept clean and out of the way.

One could also enclose the side which shelves the books by using a glass door if so desired. Usually a classroom which is connected with the farm mechanics shop will have dust and dirt accumulating and settling on the books, etc.; therefore, a completely enclosed cabinet



may be the solution to the problem of cleanliness.

With so many new visual aids coming to our attention and use, we find that this problem of storage is becoming more and more important. The veterans institutional on-the-farm training program in our vocational agriculture schools tends to create a problem



Storage for charts and student notebooks.

of storage. With good storage facilities a department can keep all the material for the vocational agriculture classes and the veterans on-the-farm training classes clean, neat, and in proper place for use.

Good housekeeping in our vocational agriculture classrooms and shops will be much more easily attained with good storage facilities.

Observations on use of School farms in Michigan

RAYMOND M. CLARK, Teacher Education, Michigan State College



Ray Clark

THE writer has recently had an opportunity to visit in a number of departments of vocational agriculture in which school farms were being operated. In each case the question as to the educational objectives which were being accomplished through use of the farm was

raised. Some of the responses were interesting and revealing from the standpoint of justification for the operation of the farm for educational purposes.

The first case is one in which the school is located in a fairly good general farming area. Some of the farms are modern and are operated with up-to-date practices being used in the enterprises which are on the farm. Many of the farms are badly depleted through soil erosion and the farm practices are out of date.

The pupils from these farms have difficulty developing their farming programs as rapidly as is desirable. In some cases dads are skeptical of new practices. They want to be shown. In other cases pupils themselves need to be shown the advantages of new approved practices by something in addition to the results of experimental evidence gleaned from books and bulletins, or the observations from a field trip taken to a farm where the practices have been proven successful.

Renting A Farm

The teacher of vocational agriculture in this school studied these problems for two or three years and decided that he must work out new devices for teaching. He first brought his F.F.A. members into the picture. They studied the problem and finally agreed to try out some ideas of their own.

They first found a barn near town which they could rent. They put in some feeder steers and some pigs. The boys in the classes had the responsibility of purchasing the steers and pigs; arranging for the necessary credit at the bank with the attendant problems of budgeting, making estimates of feed needed and so forth; determining when and where to sell; as well as the problems of planning suitable rations, sanitation and other problems of care and management of these classes of livestock.

The next year they fed more steers, purchased bred sows, and raised twenty acres of wheat in which a seeding of alfalfa-brome was established. The chapter out-grew the rented land and the small barn they had rented and began to look for additional experiences

through more complete farming operations. They found a man who was anxious to lease his 120-acre farm to them for a period of years and let them operate it as they chose.

The F.F.A. chapter has accepted the lease of the farm and has been operating it for about a year. All of the problems of planning the farm organization including the cropping program to be followed; the livestock to be carried; the maintenance and repairs of farm buildings and machinery; credit; and other problems of farm operation and management have been met. The chapter members who need additional farm experience do the work on the farm. They receive regular wages for their labor. Individuals are selected and assigned on the basis of their past experience and their need for new kinds of experience. In cases where it is necessary to use experienced help, F.F.A. members who can be spared from work at home are employed for these operations.

Purposes Are Clear

This department has been visited by the writer many times over the period in which the above development has taken place. On each visit the teacher has been asked such questions as: Why do you undertake such a program? What are your purposes in developing this program? Are you neglecting the individual supervised farming programs for your boys? Can you see any effect of this program on the home farms of your students?

The replies indicate that the purposes are clear. The farm does demonstrate the effects of good practices. It gives pupils themselves actual, practical experience in the planning and execution of practices which they might not be able to secure at home. It provides first hand experiences in many aspects of farming which F.F.A. members might learn much later and at great cost. For example, these F.F.A. boys learn the importance of insurance, the problems of credit, some of the legal aspects of farming such as liability for fences and damage caused by livestock which they might later learn to their sorrow.

The teacher says practices which these boys, and their dads, see carried out on the farm are carried over to the home farms. Individual farming programs are strengthened and the classroom problems have become real and vital.

A further note should probably be added. Inquiry has brought out the fact that the legal relationships of the F.F.A. to the superintendent of schools and Board of Education have been recognized and are cleared. The Board of Education has approved the project. The lease to the farm is held by the Board and they are constantly informed regarding the financial status of the project.

Serving Part-Time Farmers

A second department which is operating a school farm involves many similar kinds of situations as the one described above. These need not be repeated, however, other aspects of the situation may be described. The school serves a consolidated area on the edge of a large city. During the approximately 30 years of its existence, the city has grown until the school is serving many persons who formerly were farmers, but are now industrial workers. Some of these are part-time farmers, others are city dwellers, but they have sons who are interested in becoming established in farming.

Conferences with this teacher have centered around such questions as: How can I provide the best farm experience for these boys who do not have facilities at home for real farming programs. We have worked on possibilities of "placement for farm experience" in the ordinary sense of the word, and some of his "placements" have been very satisfactory. They have failed to provide for all of the pupils who needed and wanted farm experience.

The F.F.A. finally leased a 160-acre farm (again through the Board of Education and with the advice of the advisory council) on which the boys who lack adequate facilities at home can gain additional farm experience. The members make decisions regarding the practices to be used in the operation and management of the farm. Those who need the experience of making managerial decisions and those who need to practice skills in the operation of the machinery or in the conducting of the enterprises have an opportunity to practice on the farm.

This chapter also began its farming operation through the use of rented land. It owned a tractor and machinery and engaged in the raising of wheat and other cash crops. The land was in relatively small parcels and the tractor was on the highway much of the time. The teacher feels that they have eliminated this one serious hazard and that they are using the farm to provide a real learning situation for prospective farmers.

Use Privately Owned Farm

The third farm represents a different type of situation. In fact, it might not be classified by many as a school farm. The farm is owned and operated by an individual farmer in the community, just as any other farm of the area. The teacher of vocational agriculture and his pupils chose the farm as a sort of demonstration farm, particularly for soils work. They arranged with the farmer to make an intensive study of the farm, particularly with regard to the soil problems. The pupils have mapped the soil types, the drainage problems, the erosion problems, the soil deficiency problems which they discovered and the field layout existing on the farm at present. They have recommended the changes which they believe should be undertaken on the farm. The fertilizer and liming program has been projected into the future. Rearrangement
(Continued on Page 250)



A high school farm operated as a commercial unit

C. A. CAZALY, Teacher, Delano, California

IN discussing high school farms it is always rather interesting to know and understand those steps which precede the purchase of a farm or may I say the incentive which creates the desire to purchase a farm. In the case of the Delano Joint Union High School Agriculture Department, this incentive was rather interesting because it followed a definite pattern which I believe might be true in many other cases.

Food Production Effort

During World War II and immediately after, our department was engrossed in the production of food not only for the community but for the entire population. In trying to carry out this program our department rented 10 acres of land and the boys rented the machinery and did all of the work in producing vegetables such as carrots, corn, squash, melons, and so forth, and these were marketed in the regular commercial channels. During this project our department found that the senior boys made outstanding managers and, they also developed leadership in handling the underclassmen in labor projects. We found that this was the best way to develop skills in these enterprises because the boys actually did the work under their own supervision. Thus, a desire was created, not only in the department but in the community, for a school farm as a part of the school to be used as a laboratory for vocational training in the type of agriculture common to the community. As a consequence, when a nearby farmer was called to the service and had to sell his farm of 80 acres, which directly adjoined our high school it was a very logical step

our district to purchase the 80 acres. Thus, our department acquired an 80-acre farm which had one small pumping plant, one good dwelling house, and one poor equipment shed. The land was in fairly good condition due to a semi-rotation practice where cotton and beans had been produced.

With the addition of this 80 acre farm our department immediately began real farm operation. The boys divided the work. Seniors and juniors planned the farming program and saw to its development and acted as foremen in the development of the work. After setting up a 5-year plan, students did all the land preparation, planting, and cultivation for the different crops which we grew such as cotton, alfalfa, vegetables, and melons.

Skill Training

During the summer-time in those first few years we hired extra help to perform the work because our students were out on jobs or were working at home. It is most important at this time to stop and realize that Delano, California is in the very heart of the grape industry where many, many acres are owned by a few individuals which brings into our community many farm laborers who must become experienced in their field of pruning, irrigation, and machinery operation. It was therefore necessary that our department train many boys in skills which they in turn would be able to use when they left high school. In this way we could improve the efficiency of those individuals in their skills.

Our farm has always been operated as a commercial project and must show

its ability to pay its way. We use it for the development of skills in tractor driving and machinery operation. In recent years we included a small herd of Duroc Jersey swine for the purpose of giving our boys skills and practice in livestock feeding, care and management, because we find this to be of increasing importance in our community.

The financing of our school farm is in accordance with the school policy in other departments. The income is maintained in the farm finance account and expenditures are paid out of the same fund.

The local Director of Agriculture meets with the school trustees at their regular meeting each month and gives a progress report of the farm crops as well as a financial report of the expenditures and the income. This financial report shows the expense and income of each crop and livestock enterprise.

Plans for the agricultural program for the coming year are talked over with the school trustees. They, being good farmers themselves, have been very helpful in successfully guiding its progress. The farm has paid for itself from its net profits as well as paying for its own machinery, equipment, and maintenance.

With the purchase of our farm it was necessary to add another pumping plant for the proper maintenance of the crops. This has not yet been paid for by the farm and is being carried by the district.

Use Of Farm For Instruction

Our department is now using the following program for our community betterment. Our Freshmen boys are given general farming and participate in those skills necessary on a farm in our community such as picking cotton, thinning lettuce, and other crops, picking corn, hoeing weeds, painting, and so forth. Our Sophomores are given an intensive year of skills such as driving tractors, handling equipment, machinery repair, pruning, and those other skills which fit into a general farm. Our Juniors are given an intensive course in livestock, through livestock production, management, and marketing and use the swine on the farm as a laboratory. The Seniors are given a course of farm management which includes planting farm crops, rotation, soil testing, surveying, producing of crops and marketing, also the painting and construction of buildings and equipment and the repair and maintenance of farm equipment and we feel that by using the farm as a practical farm where the boys actually do the work and are in contact with the expenses and the incomes from these crops that they are realizing the program of vocational training. The operation is in every way similar to a commercial venture and is in line with those practices being used in our community.

We find many instances in which our boys have found good jobs after leaving school and have directly put their training into use.

Success is ambition entirely surrounded by enthusiasm and endeavor.

Build to meet needs

JOHN HOVENS, Teacher, Manasquan, New Jersey

IN the dozen or so years that vocational agriculture has been in the curriculum at Manasquan, New Jersey, which is a rural area close to the seashore resorts, a good deal of interest has been developed in securing facilities with which to vitalize and improve the instructional program.

I believe that one reason for this series of developments is that our classes always include some who have only a semi-rural background. It has been with the idea of giving some of these lads a closer contact with the equipment, skills, and operative jobs of agriculture that certain facilities were considered desirable. After all, if our program continues to draw these boys who are not living on operated farms, the least we can try to do is to help them find out if they have any natural inclinations or liking for the work.

I think it unnecessary to go into a long description of each or any of the facilities which we use. For vocational agriculture people, merely a list will probably suffice; especially since we do not have a "show-place" or a school farm. Nothing that we have is really unusual in itself. All are simply adequate types of construction and ordinary pieces of equipment arranged to be used.

Varied Units To Meet Local Needs

About 200 yards from the main high school building is located a separate structure which is our "agriculture building." In addition to an adequate-sized classroom with many desirable conveniences, there is an 18'x32' greenhouse and head house, plus a 30' hot bed on the south or street side, and on the other end an adequate two-room shop with outside double doors and most of the other desirable features and equipment.

Our latest addition is a 20' x 50'

concrete block building containing a brooder room, feed room, 20' x 20' laying "house," a tractor "barn" and a poultry processing room equipped with an electric scalding, mechanical picker, etc., all of which are housed under one roof so as not to present a scattered, haphazard appearance.

It should not be necessary to take space here to go into the details in which these facilities fit in for demonstrations and practical work and activity of various sorts. More to the point would be a few ideas, perhaps, on planning for such additions for the benefit of other workers in the field.

I think that a positive, logical approach to the problem includes an evaluation as to the need for creating learning opportunities for the boys. Then determine how well do the facilities lend themselves to teaching the manipulative skills and operations incident to some of the major enterprises found in the community. Don't acquire such a school layout, if it is going to create more problems than it solves.

Where it is the established thing to have practically 100% home projects on a desirable scale, school facilities of the sort described are probably not needed. Especially if the more extensive enterprises—fruit, field crops, beef, etc., are important, and flowers, vegetables, eggs and poultry meat sold directly to the consumer are not. Then if facilities are contemplated, be careful to plan them not so small as to prevent the various operations being finished before they are well started, nor so large that they require more than a reasonable time to be allotted in the total program. Think also of the need for maintenance, since they will be more or less in the public view. The need for having boys available to continue operations through some of the

vacation periods must not be overlooked.

Altogether we enjoy working with our layout. Most of the construction (excepting the classroom, lavatory, and heating equipment) has been the work of the successive classes over the years (see photo). I think that much of a very practical nature has been learned by the boys, and much will be learned in the future.

Classroom Facilities

(Continued from Page 246)

We see that there are two outlets for electricity above the work table in the back of the room. There is also an outlet on the wall opposite the windows, and one at the front of the room.

The windows are equipped with durable shades to help control the sunlight; and, in addition, have dark shades that will darken the room sufficiently that pictures may be projected satisfactorily on a screen.

A look into the storeroom reveals shelving along one side and across the far end. Ample space has been provided for storing neatly and conveniently the necessary teaching materials. The stand for the movie projector is also kept here.

There is a small office on the right of the entrance to the classroom. Through the window we see the usual office fixtures: desk, telephone, filing cabinet, coat cabinet, typewriter table and typewriter, and chairs.

Upon questioning the custodian, we learn that the classroom can be heated independently from the main building so night meetings can be held comfortably and economically.

As we turn to leave this classroom, we are aware of the interest in vocational agriculture that these school people and this community have, as is evidenced by the facilities they provide.

School Farms in Michigan

(Continued from Page 248)

of fields to control soil erosion and make best use of the land has been suggested and the cropping program adapted to the classes of land has been presented to the owner.

Pupils have been encouraged to relate their study of problems on this farm to their home farms. In many cases they and their dads have adapted suitable soil practices at home as an outgrowth of the studies made on the demonstration farm.

The following statements may be made regarding the uses of school farms for instructional purposes: (1) School farms should be used for specific purposes to meet the peculiar needs of a community. (2) School farms should be planned with specific educational objectives in mind. The school farm should represent the best means for attaining the objectives. (3) School farms should be secured and operated with full approval of the Board of Education. Responsibility for accidents must be recognized, and the Board of Education must indicate a willingness to accept whatever responsibilities are incurred in the leasing and operation of the farm.



Students constructing a new poultry house.

Community cannning centers

**gain flexibility with addition of equipment
making cannning in glass practical**

T. G. WALTERS, State Supervisor Agricultural Education, Georgia

ONCE AGAIN, Georgia is promoting school community cannning plants by adapting them to the use of glass for food preservation.

This newly-adapted food processing procedure will enable many of our rural and urban families to use educational facilities they have never before been able to afford because of the high cost of purchasing containers. Now they can use their "often idle" glass jars.

T. G. Walters

the food technology department of the University of Georgia and Ball Brothers Co., Inc. of Muncie, Indiana, did considerable research work at the request of vocational agricultural leaders in Georgia.

The procedures are home cannning methods adapted to community cannning plants and consist simply of packing the jar, processing in a retort adapted to glass or in an atmospheric cooker, and cooling with water sprays—an operation which obtains quality in the finished product. The method handles materials in batches and processes with a minimum of delay.

In pioneering this new development in food processing four years ago, the State Department of Education's division of vocational education introduced cannning in glass into five cannning centers in the state. During these four years additional plants were adapted and workshops conducted on the use of equipment and procedures for handling glass, and all procedures were thoroughly tested.

Last spring the vocational education division held 18 days of state-wide workshops for state and district supervisors as well as teachers of vocational agriculture and home economics. Every vocational agriculture teacher, both white and Negro, in the state and a large percentage of home economics teachers were in attendance.

As a result of these work shops, 161 of Georgia's 371 school community food processing centers last year purchased partial or complete equipment to begin getting their plants adapted for glass. Though many of these 161 made only a start in getting this equipment, approximately 100 plants completed the adaptation and were in operation during the past cannning season. Many new plants are being built with complete equipment for using glass.

As further promotional work of its

cannning program, the vocational agricultural division is preparing a series of slides and a film strip on information dealing with needs for conserving food and procedures and methods on improved practices in cannning in community cannning plants.

"At a time when the country's food supply is of such vital importance, every effort should be made to produce and conserve as much food as possible to supply adequate amounts for family needs." With this adaptation in many of our school cannning centers, vocational agriculture and home economics teachers expect to reach many of these farm families not reached heretofore in adult classes dealing with planning, producing and processing food.

Though many teachers at first found patrons somewhat skeptical and reluctant about cannning in glass, they report that since families have seen it used successfully in the cannning plants, there has been a growing tendency toward use of larger amounts of it. Some teachers predict that 60 to 70 per cent of their cannning this year will be done in glass jars.

However, Walter E. Nix, teacher of agriculture at Hiawassee where one of the most up-to-date plants in the state completely equipped for both glass and tin was completed early in August, reported that on his first day of cannning in glass, patrons used the entire supply of jars on sale at the school and in addition, exhausted the supply available in town. He reported a breakage during



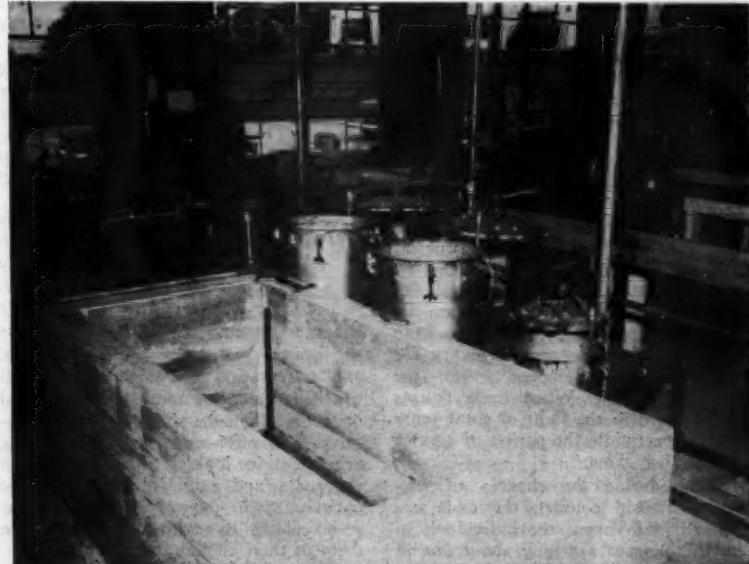
Walter E. Nix, teacher of vocational agriculture at Hiawassee, Georgia demonstrates new technique used.

the month of August of only 18 out of 5,000 jars.

This new method of processing in glass eliminates two steps from the cannning-in-tin procedure. First, housewives can easily seal their jars by hand and carry them in trays to the retort or atmospheric cooker, thus eliminating the "bottleneck" around the sealer which almost invariably occurs when patrons process in tin. Second, it is not necessary to exhaust the unsealed jars as exhaustion takes place during the initial stage of processing for both acid and non-acid foods.

The initial cost of cannning an individual unit in glass including charge for jar and processing averages about $1\frac{1}{2}$ more than tin. However, the second year the cost for using these same jars is only about 1c for a lid and an

(Continued on Page 253)



View of modern school community cannning plant at Hiawassee, Georgia, equipped for handling both glass and tin. Note in picture that two of the five retorts have been adapted for handling glass jars. Also, both types of cooling systems are shown—the spray for cooling glass jars and the water tank for cooling tin cans.

Counseling during the emergency

Specific suggestions of value in working with farmers and future farmers

ALFRED H. KREBS, Teacher Education, University of Illinois

THE other day, as I was reading some reports written by our student teachers, I ran across a brief statement with regard to the effect of the present military preparedness program on the high school pupils enrolled in vocational agriculture. I called it to the attention of my co-workers. In the discussion which followed, we agreed that teachers of agriculture have a definite responsibility to help both high school pupils and young farmers plan soundly for the future in this time of uncertainty—a future which many of the young people feel does not exist for them. What can we do as teachers of vocational agriculture? Where should we begin?

Let's start with the high school pupils. When we talk to these young boys about their plans for the future, we often find that they are unable to see beyond the forthcoming period of service in the armed forces; that they have very few of the facts necessary for making sound decisions with regard to preparation for the future after this period of service is completed. This, then, should give us our cue as to where we can start. Remembering that it is the unknown which is feared most, we should first help the boys to understand the nature of the present emergency as it relates to the probability of an all out-war, probable length of service, and their chances of living through a war.

Nature Of Crisis

Just what is the probability of an all-out war in the near future? Naturally, the question cannot be answered with any great degree of certainty. However, if we are to put any faith in the reports of the newspapers, radio commentators, and our national leaders, an all-out war is not expected in the very near future. Rather, we are preparing for a long period of partial mobilization. If you are a betting man, you probably know better than I that the odds are about five hundred to one that there will be no world conflict involving Russia within the next ten years.

How about the length of service? At the present time, the length of service is limited to twenty-one months for draftees. This may be stretched to twenty-seven months and may vary for those who enlist, depending on the branch of service. When these figures are examined in the light of total years of life expectation, the period of service seems rather short.

In considering the chances of surviving a world conflict, the odds are again all in favor of the individual. In fact, the chances are only about one in ten that any particular individual would even be injured.

If we add to the above statements the possibility that the draft may pass one by for some reason, then we have a

fairly clear picture of the situation. The total outlook should be one of optimism—that we'll all be around for a long, long time—and we must plan what we're going to do during that time.

Value Of Education Endures

This brings us back to more familiar ground—vocational guidance as we have been practicing it in the past. But we should not attempt to ignore the thoughts uppermost in the pupils' minds just because we have clarified the nature of the crisis in their lives. We must point out the added values of education and training during these times: (1) the value of an education in earning ratings and commissions in the service; (2) the value of present training in shortening the path to a particular vocational goal after the period of service in the armed forces has been completed; (3) the need for being ready to continue toward the chosen vocational goal without a period of aimless wandering in case of delay in being drafted or in case of rejection; (4) the many opportunities for continuing studies, while in the armed forces, in schools and through correspondence courses; (5) the greater need for agricultural workers—with training—during times of emergency.

There is the special problem of motivating the pupils to carry on good supervised farming programs since these are aimed at establishment in farming. Here we need to place added emphasis on the value of the supervised farming program in securing proper training. We need to show how these programs will help the boys get established in farming after they return. We can also do much by more visitations and by continually making specific references in class to the projects in order to build a pride in the ownership and management of the projects. Neither should we underestimate the effect of a strong interest on our part in the individual projects in motivating the boys to do a good job.

With this kind of approach, the pupils will be able to face the draft problem in much the same manner that they have been taught to face farming problems. However, we still need to provide the opportunities for them to discuss the issue. Class time, F.F.A. meetings, and parent and son meetings are all excellent times for considering this vital question. I'm sure that the boys themselves will offer many more convincing arguments for looking to the future with eagerness and optimism if given the opportunity to express them. It is our responsibility to set the stage and guide them in their thinking.

The senior high school boy presents a special problem in that he is in the transition period between high school pupil and young farmer. In addition to the problems discussed above, the senior

Teachers of vocational agriculture are being approached more and more for advice by their students, both high school pupils and young farmers, as a result of the present emergency situation. The problems involved range from those of a purely vocational nature to strictly personal, social and emotional problems. These problems fall in the area of guidance, and are forcing teachers of agriculture to recognize more clearly than ever before that guidance activities are a definite and very important part of a total program of vocational agriculture.

It is, therefore, becoming increasingly necessary that those activities which can be properly classified under the heading of guidance be so identified; and that we turn to the field of guidance for assistance in developing techniques and methods for carrying on these guidance activities successfully.

The following article treats only certain vocational guidance problems which have been magnified by the emergency situation.

boy is concerned with his equity in the farm business accumulated through his supervised farming program. Many parents have maintained this equity in the business for the boy. For example, a father may keep stock for the boy. This should be encouraged, and emphasis placed on the value of such action in keeping the boy interested in his home farm and community. Those boys who have been planning on advanced training should be encouraged to continue with it until they enter the service.

Problems Of Young Farmers

This brings us to a consideration of the problems of the young farmer who is also in great need of guidance and counsel during these troubled times. Here is a really discouraging situation—a young man who has just started farming for himself and he has to give up everything. What can he do? There are several possibilities for making it easier for the young farmer to start in again after he returns. These possibilities include setting up a situation to which he would want to return. Of course, we must here also make sure that the nature of the emergency situation is understood before we can hope to direct his thinking to planning for the future. What are these possibilities? Well, here are a few.

We can start with one young man who has just been faced with the problem under discussion. He had been farming for himself for just about a year when he was notified that he was being recalled to active duty in the Marine Corps. The details of his solution aren't important. What is important is the agreement he made with his landlord—an agreement to the effect that he will again take over the farm when he is discharged. He is a young man with an eye on the future.

There was an interesting solution found by a father and son during the last war. The father was unable to handle the large farm business after his son left. The son's herd of swine had to be sold. However, since the breeding stock was of such high quality largely because of the son's own efforts, the father sold the herd with an agreement which made it possible for the son to buy back foundation stock on his re-

turn. The young man is once more in the swine business.

In still another case, a young tenant farmer sub-rented his farm on a fifty-fifty basis for the duration of his period of service. He contributed half of the labor by paying for a hired man from his share of the profits. In this way he managed to hold together all of his equipment and livestock. He had an ideal situation to which to return.

There are other variations, no doubt, of this same basic idea—that of maintaining an equity in the farm business and in the future. Some kind of arrangement can usually be made so that the young farmer can get off to a flying start when he returns. Class time during young farmer meetings, special group meetings called to discuss this particular issue, and individual counseling will all need to be utilized for this purpose.

What Can We Do?

It may well be that the purely vocational problems of the pupils and young farmers which we have been discussing are less important than their personal, social and emotional problems; especially the need for the feeling of security which comes with belonging to some place and to some group of people. In other words, the maintenance of community ties. What is the responsibility of the teacher of agriculture here?

First, since many of us feel in adequate when it comes to dealing with this kind of problem, let's recognize fully the fact that most people need only someone to talk to—a sympathetic listener. In fact, if we are to place any credence in the Rogerian philosophy with regard to counseling, listening, reflecting the ideas of the counselee, and helping him to clarify his thoughts are the essence of counseling. We can do a lot by being just good listeners, or sounding boards.

Secondly, let's not underestimate the effect of good vocational counseling in providing the needed feelings of security and belongingness. When we show concern for the future and try to help plan with the young people for their establishment in farming upon their return, we are already beginning to tie them close to their home town and community. We are helping them to stake out a claim in the community—a claim which will give them an interest in the community and to which they must return if they would profit from it.

There are, however, other ways in which we can serve these young folk in regard to their personal need for security—other things we can do to keep them interested in their home community and to show the interest of the community in them.

One of the first things that we can do is to write letters. News about the school and the vocational agriculture department will keep away that feeling of returning to a strange place. It will keep the young man growing with the school and agriculture department. He will be eager to return and see for himself all the changes that have been described in the letters.

Sending occasional pictures of the

school, agricultural scenes, or other familiar places is also a good idea. Taking a look at the pictures stored in any young man's wallet will give us a pretty good idea of just how much a picture can mean.

The F.F.A. might want to sponsor the sending of F.F.A. newsletters or the local newspaper to all former members who are in service. This will help keep the young men up to date on local happenings and developments. For those of voting age, it will help give them faith in their right and ability to vote wisely by absentee ballot. Even though they are far away, they can still have a hand in local affairs.

In some cases, the F.F.A. might want to sponsor the showing of a particular individual's stock in the local fair. There would certainly be a lot of interest in the home community generated by the receipt of a prize from such an act—or just in knowing that the people at home thought enough about one to go to that much trouble and effort for him.

For those young men who have a stake in a farm or in some stock, periodic letters describing how the farm or stock is doing would do much to maintain interest and draw the person back home. It wouldn't matter if someone else wrote about the same thing. The point of view would be different.

Enlist Aid Of Others

The number of such things to do is great, and the burden would be more than one teacher could bear if he attempted to do the job alone. It is important that we marshall the forces of all the people in our programs in carrying on these activities. In the meantime, we can do as much as possible to maintain the ties which give these young men the feeling of security and belonging which are our main hope for bringing them back to their home community, and for helping them keep their interest and faith in the future while they are gone.

Yes, we do have an important task before us in guiding our high school pupils and young farmers in these troubled times. First, we must bring about an understanding of the facts with regard to the nature of the situation. Then we must proceed to guide the thinking of these young people in planning for a future which will show an ever increasing need for trained personnel in the field of agriculture. Thirdly, we must promote a feeling of security and belonging in the form of a community which is interested in their welfare and which is looking forward to their return. It isn't a hopeless or desperate situation, but a future filled with promise—a promise made possible, in part, by our help in presenting the facts, assisting in the correct interpretation of these facts, and serving as the point of inspiration for planning for the return of these young men to civilian life.

The sharpest rise in child population was in the Pacific Coast states. All areas have more children now than ever before.

Community canning centers

(Continued from Page 251)

average processing charge of 2c, thereby saving more than half. The glass jars can be used over a period of years, depending on the care given them. Thus, those farm families having on hand adequate supplies of jars would realize a considerable savings over a period of years if recommended amounts of food needed to insure having an adequate diet are canned.

Breakage which has always been one chief drawback to glass jar canning in school community plants has been reduced to practically nothing by an air pressure system and water spray cooling method.

The same equipment adapted to processing in glass may also be used for tin, but the new method of processing represents a radical departure from the procedure followed by school community food processing centers prior to this adaptation for glass. Steam which is lighter than air is admitted at the top and the air vented from the bottom of the retort through the large bottom drain.

In each plant an air compressor is available from which an air valve, attached to the retort, maintains the "cook" pressure inside the retort until the jars are cooled. In order to cool the jars as rapidly as possible, a small single spray nozzle just under the retort cover is used first producing a fine mist-like spray in a solid cone. In this way small particles of water striking the glass remove only a small amount of heat. A second set of three spray nozzles is used after the retort temperature has dropped to about 190 degrees, furnishing the additional cooling water required for full retort loads. At this stage of the cooling cycle, the jars, still warm, can be removed with absolute safety and further cooling accomplished in the open with cold water sprays.

The over-all time for processing in glass and tin is about the same.

Total cost of converting three retorts including the purchase of an air compressor, air reducing valve, thermometer, nozzles, valves, and pipes ranges from \$250 to \$300, not including labor. All the spray nozzles, fittings, pipes, and valves needed for the conversion of a single retort to glass come in a handy kit and may be purchased as a unit for \$25. Cost of any additional piping needed will vary from \$10 to \$25.

In adapting school community canning plants for glass, one new piece of equipment—an atmospheric cooker—has been introduced that may be used for scalding, blanching, or processing. It consists of a cylindrical cover which fits down over a basket. A pan with overflow holds water into which the bottom of the cover dips, and a rack supports the cover one inch above the bottom of the pan. The raised center of the rack supports the basket of produce or jars above the water level. When the steam, entering at the top, forces all the air out under the cover and up through the water seal, just enough steam is released into the cooker to allow a visible discharge of steam from the water in the bottom of the pan.

Learning through magnetic recordings

GEORGE W. WIEGERS, JR., Teacher Education, University of Tennessee, Knoxville



George Wieggers

us could benefit from listening in on one of our own classes. With the help of a magnetic recorder this is now possible.

The use of a recorder during the last two years has led to a belief in the following applications.

Student Teaching

The Agricultural Education Department has used tape recordings to help student teachers improve on those activities which require speaking. These recordings make it possible for the beginners to hear their voices as their students hear them. Some gain better understandings of why their students act the way they do after listening to what was said and how it was said during the class. It has been observed that student teachers who have made self-analyses of their teaching procedure appear more eager to make a conscientious effort to improve themselves.

Student teachers have determined from recordings of classes that they are able to make self-evaluations of the following factors:

1. Apparent effectiveness of teaching techniques.
2. Clarity of explanations, directions and questions asked.
3. Degree of emphasis placed on important factors.
4. Pace of teaching, including rate of speaking.
5. Amount of teacher and student participation.
6. Continuity of thought as expressed in words.
7. Emphasis on syllables in pronouncing words.
8. Presence or absence of a speech mannerism such as a twang, lisp, drawl or mumble.
9. Pitch patterns of phrases, clauses and sentences.
10. Presence of grammatical errors, slang expressions, over-worked words or phrases, and extremes of loudness or softness.
11. Quality of voice.

It does not necessarily follow that after a teacher identifies a weakness that he can or will correct it. Some do find that they are careless in speaking or have developed some undesirable habits. This self-appraisal seems to

stimulate a desire to correct these shortcomings.

Those who have kept a record of their strengths and weaknesses as noted during the playbacks of recordings, and who have made a conscientious effort to improve these weaknesses, have shown improvement in speaking as they progressed in teaching. One student teacher dropped the "uh" which he used many times during an hour of teaching. Another overworked the word "all right" but reduced it until it was barely noticeable. A third spoke in such a low tone that some students could not hear what he said. After hearing recordings of his voice he realized why students kept asking him to repeat what he had said.

The audio device has been used to improve procedures and content of conferences. An analysis of a recorded conference pointed up a case where one of the participants cut other members short by interrupting before the person talking has completed what he had to say. This person did not realize that he had developed such a habit.

Recordings can be used to improve interviewing techniques and auditory experiences accompanying demonstrations. Alert teachers conducting interviews or demonstrations are concerned with how well they accomplished what they tried to do. A recording supplies evidence which can be used in this evaluation.

Often student teachers are called upon to appear before various organizations. Usually they are not able to give, without practice, a talk which is commensurate with their abilities. A recorder provides an opportunity for the student to practice what he wants to say and how he wants to say it. Those who have used the device for this purpose have found themselves better able to make adjustments and corrections after they have actually heard themselves as others would hear them.

Small Group Work

The recorder has been used with satisfaction in working with small groups of students. In order to get a balance of voices the non-directional microphone should be placed in the center of the speakers table. Students soon become accustomed to the microphone in their presence.

The average classroom walls reflect so many sounds that it is almost impossible to get a true reproduction of each student's voice. The pick-up of these echoes can be decreased by treating the room acoustically. In order to get the proper balance of all the students' voices, it may be necessary to use several microphones in the room.

The students' interest in the recording equipment may be used as a means to an end by permitting them to determine their strengths and weaknesses. The students participating in discussions

or giving reports seem to want to get "in the act" after they become accustomed to the microphone. They are usually very enthusiastic about hearing themselves and their classmates on a recording. As evidenced by student reactions and improvements, it would appear that most students could benefit from hearing their own voices.

F.F.A.

Magnetic recordings have been used effectively by teachers in helping F.F.A. members improve opening and closing ceremonies, parliamentary procedure, committee discussions and reports and other auditory activities.

Perhaps the recorder has been used most in helping to develop or improve public speakers. The student practicing his speech can operate the machine himself. He can listen to his recorded speech for the purpose of improving such things as content, enunciation, diction, emphasis, timing, pronunciation and other items.

Radio Programs

Students preparing to present a radio program need much practice in order to present the type of program they want. They can make practice more interesting by using a recorder which they operate according to their own needs and wishes. Students appear to be more at ease after performing a time or two before a live microphone than they do at the beginning. Also, at the broadcasting station they usually appear more at ease after having practiced before a microphone and having heard how they sound.

In some cases it may be impossible for all students to appear for the broadcast at the proper time. Programs can be prepared in advance in the school or away from school for later broadcasting. These recordings can be sent out over the air directly from the recording.

Some broadcasts which are of particular interest and value to students of vocational agriculture come at a time when it is impossible to assemble the students to listen in. Also, the broadcast may not fit the immediate teaching situation. It is possible to make a recording of a broadcast directly from the radio receiver which at a later time can be used when appropriate in a teaching situation.

Recording Address

The editors of the Agricultural Education Magazine have considered it of value to provide pictures of individuals submitting articles for publication. In many cases pictures accompany the article to help the reader to better understand what was written. Magnetic recordings make it possible to bring the readers still closer to the leaders in the field of agricultural education. The Department of Agricultural Education now has several recordings of addresses made by leaders in our field. Teachers of vocational agriculture who have seen pictures of these men, read their articles and have heard them speak, have better appreciations and understandings than if any one of the three means of commun-

(Continued on Page 255)

Selecting books

BEN BRISTOL, Graduate Student, Oklahoma A. & M. College



Ben Bristol

TEACHERS are faced with the problem of selecting suitable books for their departments of vocational agriculture. They are besieged with numerous letters, pamphlets, catalogues, and book salesmen, all extolling the virtues of various agricultural books.

Some of these books will furnish excellent sources of reference material for students of vocational agriculture, but others will be of little use to the local department. Too often the teacher may find himself ordering books which will do little but occupy valuable space on the bookshelf.

It becomes necessary for the teacher to set up criteria for selecting books which will justify the expenditure of money entailed in their purchase. Boards of education are justifiably loath to buy numerous books which are seldom used to good advantage by the students and teacher.

Examine Books Before Purchasing

It is a good plan to actually examine each book considered for purchase, rather than ordering on the basis of sales reviews of books written by those who cannot be familiar with conditions as they exist in the local community. All reputable book companies will gladly send sample copies for free examination.

The following factors may be considered in selecting books: (1) Author and co-workers, (2) References used in writing the book, (3) Organization, (4) "Readability," (5) "Applicability," (6) Completeness of ideas, (7) Use made of graphs and tables, (8) Analysis of selected chapters, (9) Attractiveness of the book, (10) Cost, (11) "Up-to-dateness," and (12) "Usability."

It is always well to know the background of the author and his co-workers. Questions which might be answered in determining the worth of the book from this angle are: (1) What practical experience and education have the writers had up to the time the book was written? (2) Have they faced and successfully solved similar problems which the vocational agriculture teacher and his students will have? (3) Are they merely writing from the experiences of others?

References listed in the book will furnish an indication of the care with which the book was prepared. Questions which might be profitably answered by the prospective purchaser are: (1) How many references were used? (2) How many references from different sources were used? (3) How up-to-date were the references used? (4) How reliable were the references used?

The organization of the book is an item which can be quite revealing. Questions which might apply in this case are: (1) Does the book have a lot of space devoted to history which might be better utilized with other material? (2) Does the author begin the book with a great deal of historical information which, though interesting, furnishes little practical information which can be used in getting the job done? (3) Is the table of contents organized in such a manner as to enable the teacher and students to quickly turn to information desired? (4) Is the index organized so it can be used in easily finding the different subjects covered in the book? (5) Are the chapters in the book organized in a logical manner, considering the scope of subject matter found in the book? (6) Are difficult and technical terms which are used in the book explained?

Readability refers to the ease with which the book can be read. Is the book written in a clear, easily understood manner? Are there many sentences which seem to have little meaning, or which do not contribute to a clear understanding of the material discussed? Are there numerous quotations? Are there enough good pictures to help make the book interesting? Is the type large enough to be easily read? Are the words and pictures clear? Are important sections set-off with appropriate headings? Is there enough white space on each page so the book is not tiring to read, for a person with normal vision?

Applicability refers to how well the material included in the book applies to the local farming situation. Are there many chapters in the book which have little or no application to local conditions? Was the book written for a different section of the country than the one in which you are teaching? Do the examples which are used have a direct bearing on the problems with which you and your students are faced? Has the book been written for high school students of vocational agriculture?

Completeness of ideas refers to the thoroughness with which the author treated the subjects he wrote about. Does he have a great many generalizations in the book? Does he leave a lot of your questions on the subject unanswered, or perhaps ignore them completely? Does he seem to have a grasp of the entire situation about which he writes?

The use of graphs and tables can be a real help in summarizing important data. Does the author make use of too many graphs and tables? Does he use too few? Are they clear and understandable? Do they tell an important story?

Books written on similar subjects will have some chapters which cover essentially the same material. These can be easily compared for accuracy, completeness, and content.

The books selected for purchase should be well-bound, printed on good

quality paper, of convenient size, and should have as attractive a cover as possible.

Books covering similar subjects can be compared for cost. Sometimes the books which are the most usable will cost the least.

Up-to-dateness includes such items as date of copyright and date of revision. The number of times reprinted will furnish an indication of the book's popularity.

Usability refers to the ease with which the book will fit into the individual teacher's plans for instruction. Some otherwise excellent books may fail completely on this particular point. The teacher should not recommend a book for purchase which he is not willing to make use of.

It is fully realized that the twelve criteria mentioned will not cover every situation. The decision in the final analysis, will rest with each teacher of vocational agriculture. His judgment will determine the extent to which the books in the vocational agriculture library will help meet the needs of his students. •

Learning through magnetic recordings

(Continued from Page 254)
ication were lacking. Of course, it would be more desirable to hear and see each leader in person, but geographic and other factors make this difficult and often impossible.

By using a low impedance directional microphone with matching transformers and extension cord it is possible to record addresses without attracting the attention of the listening audience. In some cases the microphone can be concealed if the presence of it disturbs the speaker.

It may not be possible to control unwanted noises which the microphone will pick up. Also, the presentation itself may need editing. If tape is the recording medium, it is easily edited and spliced by simply cutting and splicing the cut ends with pressure-sensitive adhesive celluloid tape.

The Tape Recorder

The writer has gained experience by using a "Soundmirror" tape recorder. The model found to fit most situations was the one which provides sixty minutes recording time. A unique feature of this one-hour-recording-time machine is that it permits an hour's continuous recording without the necessity for a break at the half-way point to turn the tape over, and at the same time permits the editing of the material, not possible with the so-called dual track machines. The recorder used is portable, has inputs for both microphone and radio, has a high impedance crystal microphone, a six inch built-in loud speaker and an output circuit which can be used to feed an external loudspeaker or earphones.

To increase the uses and effectiveness of the machine, the following have been procured: a set of earphones, twelve inch external loud speaker, low impedance directional microphone with matching transformer and sixty feet of cord. •

Organizing and storing teaching materials

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Virginia Polytechnic Institute

FOR THE PAST three years the staff of the Agricultural Education Department at Virginia Polytechnic Institute has stressed, during pre-service and in-service training for teachers, the importance of classifying and organizing teaching materials for the most efficient use, and storing them in a manner which would properly preserve them.

During 1949-50 a study was made to determine the practices being used and those recommended for organizing ten kinds of teaching materials by the teachers in the most efficiently organized departments of vocational agriculture in Virginia. The fifty-one departments included in the study were designated by the area supervisors. Fifteen of these departments, three in each of the five areas, were visited and the information for the study secured by interview with the head teacher of each department and observation of the practices being used. Each of the other thirty-six departments designated to be included in the study was sent a questionnaire and the head teacher asked to indicate the practices he was using and recommending. Thirty, or 83.3 per cent, of the questionnaires were returned. No effort was made to get the questionnaires returned after the initial request was mailed.

Data secured by interview were tabulated separately from data secured by questionnaire. The same questions were asked the teachers interviewed as were asked in the questionnaire. Therefore, the practices about which information was secured were the same in both procedures.

The findings of the study revealed that the following practices were being used and recommended by a majority of the teachers included:

1. Reference books were:
 - a. Catalogued in the main school library
 - b. Numbered in addition to the librarian's call numbers
 - c. Stored in the classroom of the department of vocational agriculture and arranged by subjects in built-in bookcases with clear glass doors.
2. Bulletins were:
 - a. Organized by teaching units
 - b. Stored in bulletin boxes. These boxes were of cardboard or wood construction. A convenient size was three inches thick, eight inches wide, and ten inches high. They may be open on the top or back. A cut-away corner could be used.
3. Charts were numbered and filed by teaching units.

No practice for storing charts was being used by enough of the teachers included in this study to be significant. The following are some of the comments made by the teachers:

"Charts require too much space to justify their extensive use."

"Impractical to make charts, so opaque projector is used instead."

"Charts are not important since opaque projector became available."

"Would like to have the large charts photographed and made into slides, two inches by two inches."

4. Filmstrips were:

- a. Labeled on metal containers (The Society for Visual Education, Chicago 11, Illinois, is one firm that makes circular gummed label forms to fit filmstrip containers.)
- b. Numbered according to teaching units
- c. Stored in cardboard boxes, each made to hold fifteen filmstrips

5. Lesson plans were:

- a. Typed or written on letter size paper and the plan for each teaching unit filed in a separate manila folder with the name of the unit typed or printed on the index tab of the folder.
- b. Separated by letter guides into enterprises or teaching areas
- c. Filed together in the same file drawer, or drawers, for all instructors in the department.

6. Magazines, magazine articles, and similar printed materials were organized and stored by:

- a. Keeping current issues of magazines on a magazine rack
- b. Clipping magazine articles to be kept and filing them with similar printed materials in manila folders.
- c. Discarding magazines that are not current, except professional magazines such as *The Agricultural Education Magazine* and *Chapter Chats* (State F. F. A. magazine), which may be bound and kept indefinitely for use as references.

7. Materials for use in an opaque projector were:

- a. Mounted by gluing to sheets of heavy cardboard approximately 7-½ inches by 9-½ inches
- b. Numbered according to teaching units
- c. Stored in cardboard bulletin boxes with a label attached to the outside of each box on which was listed the subjects of materials stored therein.

8. Slide films, two inches by two inches, were:

- a. Numbered by teaching units
- b. Separated by index tab cards into teaching areas or enterprises
- c. Filed in "Kodaslide file boxes" made for this purpose. (Eastman Kodak Company, Rochester, New York, is one firm that makes such boxes.)

d. Stored on a shelf in the office of the department of vocational agriculture. (Note: A majority of the teachers included in this study had no storage room or cabinet for the storage of visual aids. It is probable that they will store slide films in such a place if, and when, it becomes available.)

9. Specimens were:

- a. Labeled with their descriptive names
- b. Stored in uniform glass containers so far as practical
- c. Preserved in a clear liquid, such as alcohol or formaldehyde, when a preservative was used
- d. Stored in a cabinet with clear glass doors.

10. Projection equipment:

- a. Projectors were stored in a portable projection cabinet.
- b. The projection screen was used either on a floor stand or attached to the wall of the classroom over the blackboard in the front of the classroom. In either procedure it was rolled in a protective case when not in use.

11. General:

- a. A master list of the teaching materials on hand pertaining to each teaching unit was being kept in the department of vocational agriculture containing the materials in the form of:
 - (1) Reference books
 - (2) Bulletins
 - (3) Charts
 - (4) Filmstrips
 - (5) Lesson plans
 - (6) Magazine articles and similar materials
 - (7) Materials for use in an opaque projector
 - (8) Slide films, two inches by two inches, and
 - (9) Specimens
- b. The master list of teaching materials on hand was kept on loose file cards. A card was provided for recording the teaching materials pertinent to each teaching unit. The cards were filed according to enterprises or teaching areas. Index cards were used to separate the file cards by enterprises or teaching areas.

The truly generous is the truly wise, and he who loves not others lives unblest. —Horace.

Correction for April Number

Titles for two tables in *Farm Accounting, An Educational Tool* by E. L. O'Connell, p. 225, were interchanged. The title of the first table should start with the word EXPENSE; the title of the second with INCOME.

Improving instruction through equipment and facilities*

B. P. DILWORTH, District Supervisor, State Department of Education, Alabama

THE SAYING that people do best the things they like to do is another way of saying that one must be interested in any undertaking if he is to make a success of it. It is of great importance in any training program that the instructor be aware of and believe in this principle.

Webster defines interest as concern, mental excitement. Interest means whatever makes a learner want to learn. Before a learner can be interested he must in some way be brought to the state of mind where he wants to learn. This puts a responsibility on the instructor at the outset. He must bring about this desirable state of mind; must be resourceful in developing or making use of ways and devices for arousing interest. This interest can be motivated by the proper amount and kind of equipment and facilities to be used in our instruction.

I will divide this problem into two parts, (A) Equipment, and (B) Facilities, and discuss them separately.

A. Equipment:

In any community the equipment of a department of vocational agriculture should be based to a large degree upon the needs of that community. A survey should be made, and from that survey conclusions should be reached as to the type of farming being done, amount of machinery being used, number of farm shops within the community, and other such points. These conclusions then serve as the basis for selecting and securing equipment and using it to the best advantage.

Some ways in which good equipment may help to improve instruction are listed below:

1. No shop can be useful unless it is well equipped. Good tools aid in securing good workmanship.
2. Good equipment is essential for the development of skills in certain farm jobs. A well equipped department will have tools to fit the job to be done.
3. Boys are vitally interested by nature in using machines and hand tools. A good shop program can be built around this natural urge.
4. Good equipment leads to better attitudes toward the course in vocational agriculture, resulting in a better learning situation.
5. Good equipment results in better jobs being done on the home farm. The boys make use of things learned at school by carrying out the practices at home. Without proper equipment this situation would not exist.
6. Many times new equipment or different equipment leads to inquiries and

presents a challenge for the use of such equipment.

7. If there is a sufficient amount of tools and equipment, there is likely to be less idleness, more participation, and more learning.
8. Good equipment will bring added enjoyment to the boy because of a job well done. This stimulates the boy to do more and better jobs.
9. Equipment may take the drudgery out of certain jobs resulting in the boy being more interested in doing a good job.

B. Facilities:

In vocational agriculture we teach through projects, problems, laboratory and field exercises in a motivated functional way so as to fit boys to go into agriculture as a vocation. Improving instruction, therefore, is a daily problem for the teacher. Each day new exercises come up where he is expected to use new facilities. A vocational teacher has the continuous problem of collecting, assembling, and classifying his visual aids. Each year he must decide what aids to buy. Many of his aids in teaching agriculture can be assembled free; for example, specimens of grains and grasses, insects, handmade charts, and soil samples.

There are numerous ways in which facilities help to improve instruction. Some of these are:

1. Interest is the basis for good teaching. One of the easiest ways to create interest on the part of a class of boys is to show pictures, samples, charts, specimens — something they can see. Boys are naturally curious.
2. Whenever a visual aid is used, it should have a purpose. It should tie in with the lesson and add to clearer understanding of the lesson.
3. Film strips, slides and motion pictures are attractive. Usually they demand attention, portray time and motion and aid in bringing into the classroom the happenings of our times.
4. Bulletins furnish one of the most recent sources of technical information. They aid in bringing to the attention of the students the best information available.
5. As a general rule, boys feel that if a thing is good enough to be printed in a book it must be good. Books, therefore, have to be well selected and used to fit the problem.
6. The bulletin board is effective in promoting better farming programs. It is used as a means of following up the boys' farming programs. Pictures of projects, posters, and announcements of F.F.A. contests are placed on the bulletin board. It may be used to promote interest in a particular lesson.
7. Well chosen magazines will add reading material to the department. Magazines are usually first to print any new discovery in the agricultural field.
8. Good framed pictures of beef cattle, dairy cattle, and field crops help to develop a learning atmosphere.
9. A well-lighted building is essential to the best learning conditions.
10. Adequate electric power to operate all equipment effectively, results in more and better work.
11. Comfortable individual chairs and tables put the students in a better frame of mind for learning.

Workshops in rural electrification

ARKANSAS vocational agriculture service has arranged intensive workshops in rural electrification for 300 vocational agriculture teachers this summer. The workshops include two three-weeks graduate courses by the Department of Agricultural Engineering at the University of Arkansas, and eight workshops in strategically located and equipped high schools over the state. The workshops will be concerned with arrangement of vocational agriculture shops for teaching electricity to boys in young farmer, veterans and adult farmer classes, and will use teaching material prepared by the Athens, Georgia office of S.A.A.E. and V.A.E.* and other agencies in a manner that can be used in local schools to instruct 15,000 F.F.A. boys, 24,000 young farmers and veterans and 18,000 adult farmers who enroll annually in vocational agriculture courses.

Cooperating in preparing course outlines and in conducting the workshops will be the state vocational agriculture staff, departments of agricultural engineering and vocational teacher education at the University of Arkansas and Arkansas Power and Light Company. In the local workshops methods of conducting farm shop instruction will be given by the professional agricultural education staff, and technical instruction, practicums and demonstrations will be given by agricultural engineers. The group of teachers will receive instruction by methods which can be used with farmer students in their own high school program.

Last year workshops were held on adult and young farmer classes with emphasis on grassland farming.

C. R. WILKEY, Supervisor,
Arkansas

*Southern Association of Agricultural Engineering and Vocational Agriculture Educators.

Conclusions: Both teachers and supervisors need constantly to work on the problem of providing better facilities and equipment if we are to get away from lecturing and book teaching to the place where teaching is organized around life experiences. The task is one of continually collecting, classifying, and storing more and better teaching materials. The task is one of continually inducing boards of education to replace worn out tools and equipment.

Studies in progress in agricultural education

Prepared as a part of a special project sponsored by the National Research Committee for Agricultural Education, American Vocational Association. Members are R. W. Canada, G. P. Deyoe (Chairman), G. F. Ekstrom, Carsee Hammonds, J. B. Kirkland, W. H. Martin, and H. B. Swanson (ex officio).

SOUTHERN REGION*

BAKER, L. E. and **BROOKS, TRUMAN D.**—A Study of a Group of Former Vocational and a Group of Non-Vocational Agriculture Students of Madison County High School Who Are Engaged in Farming. Thesis. M.Ed. University of Georgia.

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*Compiled by J. B. Kirkland, Teacher Education, North Carolina State College.

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SWEANY, H. PAUL — Continuing Study of Student Achievement in Dairy Improvement and Swine Production Projects. Non-thesis study, Division of Education, Michigan State College.

SWEANY, H. PAUL — Educational Needs in Vocational Agriculture of Families Engaged in Part-Time Farming. Non-thesis study, Division of Education, Michigan State College.

THOMPSON, J. ROBERT—A Study of the Fifty Brookings High School Agricultural Students Who Were Awarded the State Farmer Degree During the Twenty Year Period from 1930 to 1949 inclusive. Non-thesis study, Department of Education, South Dakota State College.

TOLBERT, RALPH H.—A Time-Duty Study of Vocational Agriculture Teachers in Georgia. Thesis, Ph.D., Department of Agricultural Education, The Ohio State University, Stewart, Adviser.

TORRENCE, ANDREW P.—The Community Attitude Toward Institutional On-Farm Training Program in Arkansas, Arkansas. Non-thesis study, Department of Agricultural Education, University of Wisconsin.

TRUITT, J. P.—In-Service Training for Teachers of Vocational Agriculture in Kentucky. Thesis, Ed.D., Department of Agricultural Education, University of Kentucky, Hammonds, Adviser.

TSCHETTER, J. H.—A Balanced Program of Agriculture for the Mountain Lake Minnesota, Community. Non-thesis study, Department of Agricultural Education, University of Minnesota.

WALL, STANLEY — The Needs of Out-of-School Rural Young Men in Kentucky for Systematic Training in Farming. Thesis, Ed.D., Department of Agricultural Education, University of Kentucky, Hammonds, Adviser.

of Agricultural Education, University of Kentucky, Hammonds, Adviser.

WATSON, ROY W.—The Relationship of Certain Personal, Family, Farm and Economic Factors to the Farming Status of Former Pupils of Vocational Agriculture in Three Counties of Virginia. Thesis, Ph.D., Department of Agricultural Education, The Ohio State University, Kenestrick, Adviser.

WENDORFF, U. E.—Techniques and Procedures Employed in the Institutional On-Farm Training Program for Veterans Which May Be Effectively Used in Training Young and Adult Farmers. Thesis, M.S., Department of Vocational Education, University of Nebraska, Deems, Adviser.

WHITE, CONRAD — The In-Service Training Needs of Teachers of Vocational Agriculture in Teaching Animal Husbandry. Thesis, Ed.D., Division of Education, Michigan State College, Byram, Adviser.

WILSON, RICHARD H.—The Adult Farmer Program in Vocational Agriculture in Ohio in 1949-50, With Implications for Further Improvements. Thesis, M.S., Department of Agricultural Education, The Ohio State University, Bender, Adviser.

WOODIN, RALPH J.—An Evaluation of Selected Aspects of the Teacher Education Program in Vocational Agriculture at The Ohio State University. Thesis, Ph.D., Department of Agricultural Education, The Ohio State University, Bender, Adviser.

Farm forges and welders surveyed

A recent farm mechanics spot survey conducted in Michigan by Mr. Guy Timmons relative to the status of farm forge-welder numbers and usage has resulted in the following facts. Teachers of vocational agriculture in 39 schools surveyed 1,953 of their boy's home farms and found that of this number 183 (or 9.4%) indicated they had forges on the farm. Of the total 183, 77 (40.5%) indicated these forges had been in use during the last or preceding month. 99 (55.1%) stated their forges had been used during the previous 6-month period.

Of the total farms surveyed, 93 (4.7%) had electric-arc welders and 47 (2.4%) had oxy-acetylene welders. It was assumed that these welders had all been in fairly recent use.

These facts would indicate that even though the forge has lost ground in favor of the welder on the farms of Michigan, there are still more farm forges in use than there are farm welders. It is the belief that the forge still has a place on the farm for doing such jobs as annealing, tempering, metal bending operations, etc. Teachers of farm mechanics should be cognizant of these facts as they exist in their local communities, in their farm mechanics planning and teaching programs.

MICHIGAN SERVICE LETTER

If the sun has gone down, look up at the stars.

Directory

Vocational Education In Agriculture

Section I

Directors, Supervisors, and Teacher Trainers

Key to Abbreviations Used

d—directors s—supervisors as—assistant supervisors
 rs—regional supervisors ds—district supervisors FFA—specialist FFA
 t—teacher trainers it—itinerant teacher trainers rt—research workers
 Nt—Negro teacher trainers sma—subject matter specialists
 fms—farm mechanics specialists As—area supervisor

ALABAMA
 d—R. E. Cammack, Montgomery
 s—J. C. Cannon, Montgomery
 as—J. L. Dailey, Montgomery
 rs—L. L. Sellers, Auburn
 as—H. F. Gibson, Auburn
 ts—T. L. Faulkner, Auburn
 as—H. R. Calver, Auburn
 ts—B. P. Dilworth, Auburn
 as—H. W. Green, Auburn
 sma—E. L. McGraw, Auburn
 rt—R. W. Montgomery, Auburn
 it—D. N. Bottoms, Auburn
 t—H. T. Pruitt, Auburn
 ts—T. W. Gandy, Auburn
 Nt—Arthur Floyd, Tuskegee
 Nt—F. T. McQueen, Tuskegee
 Nt—E. L. Donald, Tuskegee

ARIZONA
 s—J. R. Cullison, Phoenix
 t—R. W. Cline, Tucson
 t—Wallace A. Schaefer, Tucson
 sma—H. W. Miller, Phoenix

ARKANSAS
 d—J. M. Adams, Little Rock
 s—C. H. Wilkey, Little Rock
 as—S. D. Mitchell, Little Rock
 ts—J. H. Tucker, Little Rock
 ds—T. A. White, Monticello
 os—O. J. Seymour, Arkadelphia
 ds—J. B. Ewart, Russellville
 ds—George Hollard, Jonesboro
 Ns—L. R. Gandy, Little Rock
 t—Roy W. Roberts, Fayetteville
 t—A. Van N. Showay, Fayetteville
 t—Denver B. Hussey, Fayetteville
 t—J. C. Atherton, Fayetteville
 t—Frank R. Johnson, Fayetteville
 Nt—A. G. Kirby, Pine Bluff

CALIFORNIA
 d—Walter P. Smith, Sacramento
 s—Byron J. McMahon, San Luis Obispo
 geo—P. Couper, San Luis Obispo
 as—John D. Lawson, San Luis Obispo
 os—J. I. Thompson, San Luis Obispo
 rs—G. A. Hutchings, San Luis Obispo
 rt—H. F. Chappell, Sacramento
 as—Harmon B. Toone, Sacramento
 rs—B. R. Denbigh, Los Angeles
 rs—K. B. Cutler, Los Angeles
 as—Max A. Kipf, Los Angeles
 ws—W. J. Maynard, San Jose
 rs—M. K. Luther, San Jose
 as—A. G. Rian, Fresno
 rs—R. H. Pedersen, Fresno
 rs—J. Everett Walker, Chico
 ts—S. S. Sutherland, Davis
 t—H. H. Burlingham, San Luis Obispo

COLORADO
 d—E. C. Comstock, Denver
 s—A. R. Bunker, Denver
 as—Irwin C. Elliott, Denver
 t—Ralph W. Canada, Ft. Collins
 t—E. J. F. Early, Ft. Collins

CONNECTICUT
 d—Emmett O'Brien, Hartford
 s—R. L. Hahn, Hartford
 t—W. Howard Martin, Storrs

DELAWARE
 d—R. W. Heim, Newark
 s—W. Lyle Moulds, Dover
 t—Paul M. Hodges, Newark
 Nt—Wm. R. Wynder, Dover

FLORIDA
 d—T. D. Bailey, Tallahassee
 s—H. E. Wood, Tallahassee
 ds—T. L. Barron, Jr., Tallahassee
 FFA—A. R. Cox, Tallahassee
 ds—J. C. Smith, Gainesville
 ds—F. L. Nordrop, Gainesville
 t—E. W. Garris, Gainesville
 t—W. T. Lofton, Gainesville
 Nt—L. A. Marshall, Tallahassee
 Nt—G. W. Conoly, Tallahassee

GEORGIA
 s—T. G. Walters, Atlanta
 as—T. D. Brown, Jr., Atlanta
 as—Albert Morris, Atlanta
 as—Lamar Branch, Tifton
 ds—J. N. Baker, Swainsboro
 ds—J. H. Mitchell, Athens
 ds—C. M. Reed, Carrollton
 t—Ralph H. Tolbert, Athens
 t—A. O. Duncan, Athens
 t—G. L. O'Kelly, Athens
 t—H. W. Bryant, Athens
 Nt—Alva Tabor, Fort Valley
 Nt—Benjamin Anderson, Fort Valley
 Nt—McKinley Wilson, Fort Valley
 Nt—S. P. Fugate, Swainsboro

HAWAII
 d—W. H. Coulter, Honolulu, T. H.
 s—Clarence R. Ferdinand, Honolulu, T. H.
 as—Tatsumi Horii, Honolulu, T. H.
 as—Takumi Kono, Hilo, T. H.
 t—F. E. Armstrong, Honolulu, T. H.

IDAHO
 d—William Ker, Boise
 s—Emery Howard, Boise
 as—E. L. Lovell, Pocatello
 t—H. A. Winner, Moscow
 t—Dwight Kridachy, Moscow

ILLINOIS
 d—J. E. Hill, Springfield
 s—J. B. Adams, Springfield
 t—C. F. Anderson, Springfield
 s—A. J. Andrews, Springfield
 t—H. Damisch, Springfield
 s—George W. Doak, Springfield
 t—P. W. Proctor, Springfield
 t—H. M. Strubinger, Springfield
 t—H. M. Hamlin, Urbana
 t—G. P. Devoy, Urbana
 t—Alfred H. Krebs, Urbana
 t—L. J. Phillips, Urbana
 t—M. J. Scott, Urbana
 t—J. N. Weiss, Urbana
 t—Melvin Henderson, Urbana
 t—H. J. Rucker, Urbana
 t—W. H. Witt, Urbana
 t—W. D. Buddemeyer, Urbana
 t—John W. Mathews, Urbana

Note—Please report changes in personnel for this directory to Dr. W. T. Spanton, Chief, Agricultural Education, U. S. Office of Education.

OFFICE OF EDUCATION, WASHINGTON, D. C.

Earl J. McGrath, U. S. Commissioner of Education
 R. W. Gregory—Ass't Commissioner for Vocational Education
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... Specialists ...

H. B. Swanson, R. E. Naugher, A. W. Tenney, E. J. Johnson and W. N. Elam, Program Planning; A. H. Hollenberg, Farm Mechanics.

INDIANA

d—Deane E. Walker, Indianapolis
 s—Harold B. Taylor, Indianapolis
 t—B. C. Lawson, Lafayette
 rt—R. R. Bentley, Lafayette
 it—K. W. Kilts, Lafayette
 ts—H. W. Leonard, Lafayette
 st—E. E. Chanin, Lafayette
 jt—I. G. Morrison, Lafayette
 t—J. K. Coster, Lafayette

IOWA

s—Hampton T. Hall, Des Moines
 as—G. F. Barton, Des Moines
 as—Mark Z. Hendren, Des Moines
 as—R. A. Gilman, Des Moines
 as—M. H. Goeldner, Des Moines
 as—E. J. Mabon, Des Moines
 as—D. W. Martens, Des Moines
 t—Ray J. Bryan, Ames
 t—John B. McClelland, Ames
 t—J. A. Starrak, Ames
 t—T. E. Sexauer, Ames
 t—C. E. Bundy, Ames

KANSAS

d—C. M. Miller, Topeka
 s—Lester B. Polom, Topeka
 t—P. A. Davidson, Manhattan
 t—L. F. Hall, Manhattan
 t—Loren E. Whipple, Manhattan

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d—Watson Armstrong, Frankfort
 s—P. E. Hilton, Frankfort
 ad—B. S. Wilson, Frankfort
 s—W. C. Montgomery, Frankfort
 s—Floyd Cox, Lexington
 s—Carl Lamar, Lexington
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 s—B. G. Moore, Princeton
 s—Ernest Threlkeld, Simpsonville
 s—Ben Allen Burns, Owensesboro
 s—Carrie Hammonds, Lexington
 t—W. R. Tabb, Lexington
 t—Harold Binkley, Lexington
 t—John Stanford, Lexington
 Nt—P. J. Manly, Frankfort

LOUISIANA

d—H. E. Robinson, Baton Rouge
 s—W. J. Parent, Baton Rouge
 as—N. J. Carpenter, Baton Rouge
 as—Gordon Canterbury, Baton Rouge
 as—A. Delmar Walker, Baton Rouge
 ms—Curtis Jacobs, Baton Rouge
 as—C. P. McVea, Franklinton
 t—Roy L. Davenport, Baton Rouge
 t—J. C. Floyd, Baton Rouge
 t—Malcolm C. Gaar, Baton Rouge
 t—Harry J. Braud, Baton Rouge
 t—A. Lanniere, Lafayette
 t—Allen A. LeBlanc, Lafayette
 Nt—C. H. Chapman, Baton Rouge
 Nt—Matthew J. Clark, Baton Rouge

MAINE

d—Morris P. Cates, Augusta
 ds—John A. Snell, Augusta
 t—Wallace H. Elliott, Orono

MARYLAND

d—John J. Seidel, Baltimore
 s—H. M. MacDonald, Baltimore
 t—Arthur M. Ahalt, College Park
 t—Ray A. Murray, College Park
 Nt—Claud C. Marion, Prince George's County

MASSACHUSETTS

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 s—John G. Glavin, Boston
 t—James A. Taft, Amherst
 t—Charles F. Oliver, Amherst

MICHIGAN

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 s—Luke H. Kelly, Lansing
 t—Elmer A. Lightfoot, Lansing
 s—Thomas H. Kerrey, Lansing
 s—Burton K. Thor, Lansing
 t—H. M. Byran, East Lansing
 t—Raymond M. Clark, East Lansing
 t—Raymond Garner, East Lansing
 t—H. Paul Sweeny, East Lansing
 t—Guy Timmons, East Lansing

MINNESOTA

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 s—George R. Cochran, St. Paul
 as—W. J. Kortensmaki, St. Paul
 as—A. M. Field, St. Paul
 as—Gary Wiegand, St. Paul
 as—C. Anderson International Fall
 as—John Barnes, Mora
 as—J. F. Malinski, New Prague
 t—Milo Peterson, St. Paul
 t—Harry W. Kitts, St. Paul
 t—Phillip R. Teske, St. Paul
 t—Gordon I. Swanson, St. Paul
 it—Alvin W. Donahoo, St. Paul

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 s—A. P. Fatherree, Jackson
 as—E. E. Gross, Hattiesburg
 as—E. W. Holmes, Oxford
 as—T. V. Majure, Utica
 as—V. P. Winstead, Morton
 as—A. E. Strain, Long Beach
 t—V. G. Martin, State College
 t—J. F. Seegmire, State College
 t—O. L. Snowden, State College
 t—J. R. Hamilton, State College
 sma—O. V. Clark, State College
 Nt—A. D. Fobbs, Alcorn
 Nt—A. G. Gordon, Alcorn
 Nt—Robert Derden, Alcorn

